ESTTA Tracking number: **ESTTA168702**
Filing date: **10/15/2007**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding	78782799
Applicant	Punching Concepts, Inc. d/b/a Pro Cal, I
Correspondence Address	R. SCOTT KELLER WARNER NORCROSS & JUDD LLP 111 LYON ST NW STE 900 GRAND RAPIDS, MI 49503-2487 UNITED STATES trademarks@wnj.com,skeller@wnj.com
Submission	Appeal Brief
Attachments	PCI Appeal Brief.pdf (10 pages)(3056547 bytes)
Filer's Name	R. Scott Keller
Filer's e-mail	skeller@wnj.com,trademarks@wnj.com
Signature	/rsk/
Date	10/15/2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
TRADEMARK TRIAL AND APPEAL BOARD

In re Application of Punching Concepts, Inc. d/b/a ProCal, Inc.

MARK	:	PCI
SERIAL NO.	:	78/782,799
FILING DATE	:	December 30, 2005
CLASS	:	7
EXAMINING ATTORNEY	:	Kristina Kloiber, Esq. Law Office 116

<u>BRIEF OF APPLICANT</u>

INTRODUCTION

Applicant has applied to register the mark PCI for parts for conveyor systems. The Mark is obviously the initials of the Applicant's trade name, ProCal, Inc. Applicant is appealing the Examining Attorney's refusal to register this Mark on the ground that it is likely to cause confusion with Registration No. 2537607 for the following mark:

PCI

PROCESS CONCEPTION INGENIERIE

for "machines, namely industrial robots and machine tools."

Applicant respectfully submits that due to the differences in the goods (conveyor parts compared to industrial robots), the expense of the goods and the sophistication of the purchasers, and the differences in the connotations of the marks, with Applicant's mark standing for "ProCal, Inc." and Registrant's mark standing for, **and including within it,** "Process

Conception Ingenierie," that confusion is not likely and that the Application should be passed for publication.

EXAMINATION HISTORY

The Application, as amended, is for the Mark PCI for the following goods: "Component parts for material handling machines, namely pulleys, deflection wheels, shafts, axles, track rollers, cam followers, wheel hubs, shaft and hub locking devices, clutches, brakes, torque limiters and take up frames."

In an Office Action dated July 6, 2006, the Examining Attorney refused registration of Applicant's mark on the ground that it is likely to cause confusion with the mark shown above. Applicant filed its Response to this Office Action on January 2, 2007. On February 15, 2007, the Examining Attorney issued a further Office Action making final the refusal to register based upon the Registration. Applicant timely filed its Notice of Appeal on August 15, 2007.

ARGUMENT

As is well established, determinations under Section 2(d) are based on an analysis of all of the probative facts and evidence that are relevant to the factors bearing on the likelihood of confusion set out in *In re Majestic Distilling Co.*, 315 F.3d 1311, 65 USPQ2d 1201, 1203 (Fed. Cir. 2003); *see also In re E.I. du Pont de Nemours and Co.*, 476 F.2d 1357 177 USPQ 563 (CCPA 1973). In any likelihood of confusion analysis, "[t]he fundamental inquiry mandated by §2(d) goes to the cumulative effect of differences in the essential characteristics of the goods and differences in the marks." *Federated Foods, Inc. v. Fort Howard Paper Co.*, 544 F.2d 1098 192 USPQ 24, 29 (CCPA 1976). "It is well settled that in determining the likelihood of confusion the marks must be considered in their entireties, and that it is the mark as a whole that creates the commercial impression upon the purchasers." *Western Union Tell. Co. v. Graphnet Sis., Inc.*, 204 USPQ 971, 976 (TTAB). *Accord In re The Ridge Tahoe,* 221 USPQ 893 (TTAB 1983) (THE RIDGE TAHOE and Design, "Tahoe" disclaimed, for real estate brokerage services found **not** confusingly similar to RIDGE for home building services).

There is a substantial difference in the nature and character of the goods at issue. Applicant's Mark is associated with conveyor system parts -- pulleys, shafts, axles and the like. Important parts, but rather simple and straightforward and designed for a specific purpose on a conveyor system.

On the other hand, Process Conception Ingenierie, a subsidiary of French automotive manufacturer PSA Peugeot Citroen S.A., uses its mark on industrial robots for carmakers, large expensive machines that typically need to be custom designed. "Prices of [industrial] robots will vary with the features, but are usually from 12,000 USD for an entry-level model, and as much as [$]100,000 or more for a heavy-duty long reach robot." *Wikipedia* on Industrial Robots (a copy of which is attached to this Brief). These goods are far from impulse purchases. But rather, they are products that are purchased with much consideration and extensive communication between the buyer and seller on the exact nature of the robotics needed. Such care, consultation and sophistication prevents confusion from being likely with the disparate goods of Applicant's conveyor parts and Process Conception Ingenierie's robots.

Further, the differences in the marks cannot be ignored. Applicant's mark stands for its trade name "ProCal, Inc." Registrant's mark not only stands for, but also contains, its trade name "Process Conception Ingenierie." These trade names are completely different, but they are very interrelated with each party's use of "PCI." The very different market segments for these goods are very likely to discern between Applicant and Process Conception Ingenierie and are not likely to be confused by each one's use of "PCI" for their very different products.

CONCLUSION

In summary, Applicant ProCal, Inc.'s use of its PCI mark on its conveyor pulleys, shafts, axles and the like is not likely to cause confusion with the PCI PROCESS CONCEPTION INGENIERIE logo mark for industrial robots, which are custom made and cost tens, if not hundreds, of thousands of dollars. The sophistication, care and customization that goes into the purchase of these products, along with the different trade names with which they are associated, precludes confusion between these parties and their respective products. For these reasons, Applicant respectfully requests that the Examining Attorney's refusal to register be overturned and the Application be published for opposition.

Respectfully submitted,

Punching Concepts, Inc., d/b/a ProCal, Inc.

By: R. Scott Keller

R. Scott Keller
WARNER NORCROSS & JUDD LLP
900 Fifth Third Center
111 Lyon Street, N.E
Grand Rapids, MI 49503-2487
(616) 752-2479
(616) 222-2479 (Fax)
skeller@wnj.com
Attorneys for Applicant

CERTIFICATE OF FILING

I certify that the foregoing Brief of Applicant is being electronically filed on October 15, 2007.

R. Scott Keller

R. Scott Keller

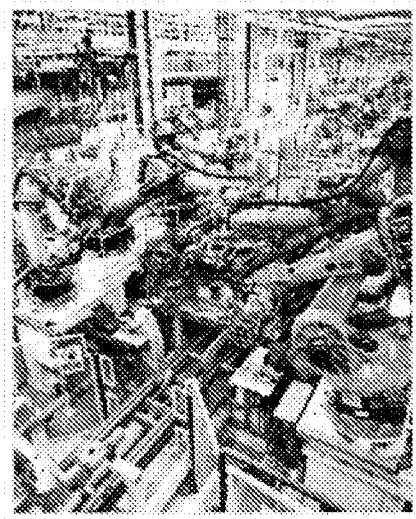
1468760

Industrial robot

From Wikipedia, the free encyclopedia
(Redirected from Industrial robots)

An **industrial robot** is officially defined by ISO[1] as an *automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes*. The field of **robotics** may be more practically defined as the study, design and use of robot systems for manufacturing (a top-level definition relying on the prior definition of *robot*).

Typical applications of robots include welding, painting, ironing, assembly, pick and place, packaging and palletizing, product inspection, and testing, all accomplished with high endurance, speed, and precision.



Robots doing vehicle underbody assembly (KUKA).

Contents

Robot types, features

The most commonly used robot configurations are articulated robots, SCARA robots and gantry robots (aka Cartesian Coordinate robots, or x-y-z robots). In the context of general robotics, most types of robots would fall into the category of robot arms (inherent in the use of the word *manipulator* in the above-mentioned ISO standard). Robots exhibit varying degrees of autonomy:

- Some robots are programmed to faithfully carry out specific actions over and over again (repetitive actions) without variation and with a high degree of accuracy. These actions are determined by programmed routines that specify the direction, acceleration, velocity, deceleration, and distance of a series of coordinated motions.
- Other robots are much more flexible as to the orientation of the object on which they are operating or even the task that has to be performed on the object itself, which the robot may even need to identify. For example, for more precise guidance, robots often contain machine vision sub-systems acting as their "eyes", linked to powerful computers or controllers. Artificial intelligence, or what passes for it, is becoming an increasingly important factor in the modern industrial robot.

History of Industrial Robotics

George C. Devol (1982)

George Devol applied for the first robotics patents in 1954 (granted in 1961). The first company to produce a robot was Unimation, founded by George Devol and Joseph F. Engelberger in 1956, and was based on Devol's original patents. Unimation robots were also called *programmable transfer machines* since their main use at first was to transfer objects from one point to another, less than a dozen feet or so apart. They used hydraulic actuators and were programmed in *joint coordinates*, i.e. the angles of the various joints were stored during a teaching phase and replayed in operation. They were accurate to within 1/10,000 of an inch. Unimation later licensed their technology to Kawasaki Heavy Industries and Guest-Nettlefolds, manufacturing Unimates in Japan and England respectively. For some time Unimation's only competitor was Cincinnati Milacron Inc. of Ohio. This changed radically in the late 1970s when several big Japanese conglomerates began producing similar industrial robots.

In 1969 Victor Scheinman at Stanford University invented the Stanford arm, an all-electric, 6-axis articulated robot designed to permit an arm solution. This allowed it to accurately follow arbitrary paths in space and widened the potential use of the robot to more sophisticated applications such as assembly and arc welding. Scheinman then designed a second arm for the MIT AI Lab, called the "MIT arm." Scheinman, after receiveing a fellowship from Unimation to develop his designs, sold those designs to Unimation who further developed them with support from General Motors and later marketed it as the Programmable Universal Machine for Assembly (PUMA).

In 1973 KUKA Robotics built its first robot, known as FAMULUS, this is the first articulated robot to have six electromechanically driven axes.

Interest in robotics swelled in the late 1970s and many companies entered the field, including large firms like General Electric, and General Motors (which formed joint venture FANUC Robotics with FANUC LTD of Japan). US start-ups included Automatix and Adept Technology, Inc. At the height of the robot boom in 1984, Unimation was acquired by Westinghouse Electric Corporation for 107 million US dollars. Westinghouse sold Unimation to Stäubli Faverges SCA of France in 1988. Stäubli was still making articulated robots for general industrial and clean room applications as of 2004 and even bought the robotic division of Bosch in late 2004.

Eventually the myopic vision of American industry was superseded by the financial resources and strong domestic market enjoyed by the Japanese manufacturers. Only a few non-Japanese companies managed to survive in this market, including Adept Technology, Stäubli-Unimation, the Swedish-Swiss company ABB (ASEA Brown-Boveri), the Austrian manufacturer igm Robotersysteme AG and the German company KUKA Robotics.

Technical description

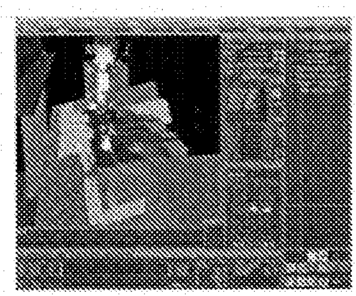
Defining parameters

- *Number of axes* – two axes are required to reach any point in a plane; three axes are required to reach any point in space. To fully control the orientation of the end of the arm (i.e. the *wrist*) three more axes (roll, pitch and yaw) are required. Some designs (e.g. the SCARA robot) trade limitations in motion possibilities for cost, speed, and accuracy.

- *Degrees of freedom* which is usually the same as the number of axes.
- *Working envelope* – the region of space a robot can reach.
- *Kinematics* – the actual arrangement of rigid members and joints in the robot, which determines the robot's possible motions. Classes of robot kinematics include articulated, cartesian, parallel and SCARA.
- *Carrying capacity or payload* – how much weight a robot can lift.
- *Speed* – how fast the robot can position the end of its arm. This may be defined in terms of the angular or linear speed of each axis or as a compound speed i.e. the speed of the end of the arm when all axes are moving.
- *Acceleration* - how quickly an axis can accelerate. Since this is a limiting factor a robot may not be able to reach it's specified maximum speed for movements over a short distance or a complex path requiring frequent changes of direction.
- *Accuracy* – how closely a robot can reach a commanded position. Accuracy can vary with speed and position within the working envelope and with payload (see compliance). It can be improved by Robot calibration.
- *Repeatability* - how well the robot will return to a programmed position. This is not the same as accuracy. It may be that when told to go to a certain X-Y-Z position that it gets only to within 1mm of that position. This would be it's accuracy which may be improved by calibration. But if that position is taught into controller memory and each time it is sent there it returns to within 0.1mm of the taught position then the repeatability will be within 0.1mm.
- *Motion control* – for some applications, such as simple pick-and-place assembly, the robot need merely return repeatably to a limited number of pre-taught positions. For more sophisticated applications, such as arc welding, motion must be continuously controlled to follow a path in space, with controlled orientation and velocity.
- *Power source* – some robots use electric motors, others use hydraulic actuators. The former are faster, the latter are stronger and advantageous in applications such as spray painting, where a spark could set off an explosion.
- *Drive* – some robots connect electric motors to the joints via gears; others connect the motor to the joint directly (*direct drive*). Using gears results in measurable 'backlash' which is free movement in an axis. In smaller robot arms with DC electric motors, because DC motors are high speed low torque motors they frequently require high ratios so that backlash is a problem. In such cases the harmonic drive is often used.
- *Compliance* - this is a measure of the amount in angle or distance that a robot axis will move when a force is applied to it. Because of compliance when a robot goes to a position carrying it's maximum payload it will be at a position slightly lower than when it is carrying no payload. Compliance can also be responsible for overshoot when carrying high payloads in which case acceleration would need to be reduced.

Robot programming and interfaces

The setup or programming of motions and sequences for an industrial robot is typically taught by linking the robot controller to a laptop, desktop computer or (internal or Internet) network.


Offline programming by ROBCAD

Software: The computer is installed with corresponding interface software. The use of a computer greatly simplifies the programming process. Specialized robot software is run either in the robot controller or in the computer or both depending on the system design.

Teach Pendant: Robots can also be taught via teach pendant, a handheld control and programming unit. The common feature of such units are the

ability to manually send the robot to a desired position, or inch or jog to adjust
a position. They also have a means to change the speed since a low speed is usually required for careful positioning. A large emergency stop button is usually included as well. Typically once the robot has been programmed there is no more use for the teach pendant.

Lead-by-the-nose is a technique offered by most robot manufacturers but is of dubious value. While user holds the robot end effector another person enters a command which de-energizes the robot and it goes limp. The user then moves the robot by hand to the required positions or along a required path while the software logs these positions into memory. The program can later run the robot to these positions or along the taught path. This technique was popular for tasks such as paint spraying.

Others In addition, machine operators often use human machine interface devices, typically touch screen units, which serve as the operator control panel. The operator can switch from program to program, make adjustments within a program and also operate a host of peripheral devices that may be integrated within the same robotic system. These include end effectors, feeders that supply components to the robot, conveyor belts, emergency stop controls, machine vision systems, safety interlock systems, bar code printers and an almost infinite array of other industrial devices which are accessed and controlled via the operator control panel.

The teach pendant or PC is usually disconnected after programming and the robot then runs on the program that has been installed in its controller. However a computer is often used to 'supervise' the robot and any peripherals.

A robot and a collection of machines or peripherals is referred to as a workcell, or cell. A typical cell might contain a parts feeder, a molding machine and a robot. The various machines are 'integrated' and controlled by a single computer or PLC.

End Effectors

The most essential robot peripheral is the end effector without which the robot cannot do anything. Obvious examples are grippers which are devices that can grasp an object, usually electromechanical or pneumatic. Another common means of picking up an object is by vacuum. End effectors are frequently highly complex, made to match the handled product and often capable of picking up an array of the products at one time.

Movement and singularities

Most articulated robots perform by storing a series of positions in memory, and moving to them at various times in their programming sequence. For example, a robot which is moving items from one place to another might have a simple 'pick and place' program similar to the following:

Define points P1–P5:

1. Safely above workpiece (defined as P1)
2. 10 cm Above bin A (defined as P2)
3. At position to take part from bin A (defined as P3)
4. 10 cm Above bin B (defined as P4)
5. At position to take part from bin B. (defined as p5)

Define program:

1. Move to P1
2. Move to P2
3. Move to P3
4. Close gripper
5. Move to P4
6. Move to P5
7. Open gripper
8. Move to P1 and finish

For a given robot the only parameters necessary to locate the end effector (gripper, welding torch, etc.) of the robot completely are the angles of each of the joints or displacements of the linear axes (or combinations of the two for robot formats such as SCARA). However there are many different ways to define the points. The most common and most convenient way of defining a point is to specify a Cartesian coordinate for it, i.e. the position of the 'end effector' in mm in the X, Y and Z directions. In addition the angles of the end effector in pitch, roll and yaw and the length of the tool must also be specified, depending on the types of joints a particular robot may have. For a jointed arm these coordinates must be converted to joint angles by the robot controller and such conversions are known as Cartesian Transformations which may need to be performed iteratively or recursively for a multiple axis robot. The mathematics of the relationship between joint angles and actual spatial coordinates is called kinematics. See robot control

Positioning by Cartesian coordinates may be done by entering the coordinates into the system or by using a teach pendant which moves the robot in X-Y-Z directions. It is much easier for a human operator to visualize motions up/down, left right etc. than to move each joint one at a time. When the desired position is reached it is then defined in some way peculiar to the robot software in use, e.g. P1 - P5 above.

Recent and future developments

As of 2005, the robotic arm business is approaching a mature state, where they can provide enough speed, accuracy and ease of use for most of the applications. Vision guidance (aka machine vision) is bringing a lot of flexibility to robotic cells. So we have the arm and the eye, but the part that still has poor flexibility is the hand: the end effector attached to a robot is often a simple pneumatic, 2-position wrench. This doesn't allow the robotic cell to easily handle different parts, in different orientations.

Hand-in-hand with increasing off-line programmed applications, robot calibration is becoming more and more important in order to guarantee a good positioning accuracy.

Other developments include downsizing industrial arms for consumer applications (micro-robotic arms), manufacture of domestic robots and using industrial arms in combination with more intelligent automated guided vehicles (AGVs) to make the automation chain more flexible between pick-up and drop-off.

Prices of robots will vary with the features, but are usually from 12,000 USD for an entry-level model, and as much as 100,000 or more for a heavy-duty, long reach robot.

Robot Manufacturers

- ABB
- Adept Technology
- Cloos GmbH
- Janome
- Kawasaki Heavy Industries
- KUKA Robotics

- Comau
- DENSO Robotics
- Epson Robots
- FANUC Robotics
- Fuji Yusoki Robotics
- HYUNDAI Robotics
- igm Robotersysteme
- Intellibot Robotics LLC
- Intelligent Actuator
- Intelitek (was Eshed)
- Nachi
- Nidec Sankyo
- OTC
- Panasonic
- Reis
- Stäubli Robotics
- ST Robotics
- Toshiba Machine
- Yamaha Motor Company
- Yaskawa-Motoman

Notes

1. ^ ISO Standard 8373:1994, Manipulating Industrial Robots – Vocabulary

See also

References

- Nof, Shimon Y. (editor) (1999). *Handbook of Industrial Robotics*, 2nd ed. John Wiley & Sons. 1378 pp. ISBN 0-471-17783-0.
  A comprehensive reference on the categories and applications of industrial robotics.

External links

- Industrial robots and robot system safety (http://www.osha.gov/dts/osta/otm/otm_iv/otm_iv_4.html) (by OSHA, so in the public domain (http://www.osha.gov/html/Feed_Back.html)).
- Robotic Industries Association (http://www.roboticsonline.com/).

Retrieved from "http://en.wikipedia.org/wiki/Industrial_robot"

Categories: Industry | Manufacturing | Production and manufacturing | Robots